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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/700,948

10/31/2003

William K. Hogan

78313 24-72 US

5971

27975 7590 04/26/2007  
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EXAMINER

LI, SHI K

ART UNIT

PAPER NUMBER

2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/700,948

Applicant(s)

HOGAN ET AL.

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings FIG. 1, FIG. 2, FIG. 3, FIG. 4, FIG. 6, FIG. 7 and FIG. 8 are objected to as failing to comply with 37 CFR 1.84(m) because the black shading/background make the lines illegible. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 6 recites the limitation "whereby any size of bore may be connected thereto for receiving any size of optical connector" in lines 3-4 of the claim. Instant specification does not describes the limitation in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. At most, instant specification teaches to accommodate an LC bore and an SC bore.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 8 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Govan Date et al. (U.S. Patent Application Pub. 2003/0063872 A1) in view of Dormer (U.S. Patent Application Pub. 2002/0130249 A1) and Auracher et al. (U.S. Patent 6,781,727 B2).

Regarding claim 1, Govan Date et al. discloses in FIG. 1 a transceiver sub-assembly comprising a housing, a window in a side of the housing for passing optical signal, a bore for receiving an optical fiber, a multiplayer ceramic feedthrough for transmitting electronic signal to the opto-electronic component. The differences between Govan Date et al. and the claimed invention is that (a) Govan Date et al. does not teach a lens system and (b) Govan Date et al. does not teach a differential drive circuit. Dormer teaches in FIG. 1 a transmitter module comprising a laser 101, a photodiode 103 and a ball lens 102. One of ordinary skill in the art would have been motivated to combine the teaching of Dormer with the transceiver sub-assembly of Govan Date et al. because a lens system focuses the light output of the laser diode into the fiber and eliminates any wasted power. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a lens system between the laser and the fiber, as taught by Dormer, in the transceiver sub-assembly of Govan Date et al. because a lens system focuses the light output of the laser diode into the fiber and eliminates any wasted power.

The combination of Govan Date et al. and Dormer still fails to teach a differential drive circuit. However, differential drive circuit is well known in the art. For example, Auracher et al. teaches in FIG. 2B a differential drive circuit for a laser diode. The differential drive circuit comprise resistors R1 and R1\* for matching impedance (see col. 2, lines 30-40) and a pair of inductive choke L and L\* for feeding DC bias to the laser diode. One of ordinary skill in the art

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would have been motivated to combine the teaching of Auracher et al. with the modified transceiver sub-assembly of Govan Date et al. and Dormer because differential drive has a higher signal swing and suitable for high speed data. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use differential drive circuit, as taught by Auracher et al., in the modified transceiver sub-assembly of Govan Date et al. and Dormer because differential drive has a higher signal swing and suitable for high speed data.

Regarding claim 2, it is understood that multi-layer circuit uses different layer for different signals.

Regarding claims 3-5, Govan Date et al. teaches multi-layer ceramic (see paragraph [0016]). Dormer teaches in paragraph [0022] heat sinking material Kovar

Regarding claim 8, Govan Date et al. teaches in paragraph [0013] flexible electrical connector 8.

Regarding claims 11-12, Dormer teaches temperature control means (thermistor 104 in FIG. 1) and thermally conductive material Kovar.

Regarding claim 13, Govan Date et al. teaches multi-layer ceramic substrate.

Regarding claim 14, Auracher et al. teaches in FIG. 2B that the choke is close to the laser diode and that data rate of 10 Gb/s is achieved (see col. 1, line 67).

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Govan Date et al., Dormer and Auracher et al. as applied to claims 1-5, 8 and 11-14 above, and further in view of Lampert (U.S. Patent 6,609,837 B2).

Govan Date et al., Dormer and Auracher et al. have been discussed above in regard to claims 1-5, 8 and 11-14. The difference between Govan Date et al., Dormer and Auracher et al.

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and the claimed invention is that Govan Date et al., Dormer and Auracher et al. do not teach different size of bore. Lampert teaches an adapter for accepting different bore sizes. One of ordinary skill in the art would have been motivated to combine the teaching of Lampert with the modified transceiver sub-assembly of Govan Date et al., Dormer and Auracher et al. because it allows connection to different type of connectors without replacing the connector (e.g., cutting the fiber and splicing with another connector). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a connector adaptor, as taught by Lampert, in the modified transceiver sub-assembly of Govan Date et al., Dormer and Auracher et al. because it allows connection to different type of connectors without replacing the connector.

6. Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Govan Date et al., Dormer and Auracher et al. as applied to claims 1-5, 8 and 11-14 above, and further in view of Sato et al. (U.S. Patent Application Pub. 2002/0196820 A1).

Govan Date et al., Dormer and Auracher et al. have been discussed above in regard to claims 1-5, 8 and 11-14. The difference between Govan Date et al., Dormer and Auracher et al. and the claimed invention is that Govan Date et al., Dormer and Auracher et al. do not teach a second lens. Sato et al. teaches in FIG. 1 a TOSA comprising a first lens 2 and a second lens 8. One of ordinary skill in the art would have been motivated to combine the teaching of Sato et al. with the modified transceiver sub-assembly of Govan Date et al., Dormer and Auracher et al. because the second lens focuses light on the fiber while the first lens focus for the laser and converts light generated by the laser into parallel light. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second lens, as taught

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by Sato et al., in the modified transceiver sub-assembly of Govan Date et al., Dormer and Auracher et al. because the second lens focuses light on the fiber while the first lens focus for the laser and converts light generated by the laser into parallel light.

Regarding claim 9, Sato et al. teaches that the housing is hermetically sealed (see, e.g., paragraph [0002]).

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Govan Date et al., Dormer and Auracher et al. as applied to claims 1-5, 8 and 11-14 above, and further in view of Yonemura et al. (U.S. Patent 6,540,412 B2).

Govan Date et al., Dormer and Auracher et al. have been discussed above in regard to claims 1-5, 8 and 11-14. The difference between Govan Date et al., Dormer and Auracher et al. and the claimed invention is that Govan Date et al., Dormer and Auracher et al. do not teach that the housing is hermetically sealed. However, it is understood that such a module is hermetically sealed to prevent contamination and moisture, which would degrade the laser by shorten its life or blocking the light output. To strengthen the rejection, the Examiner further includes Yonemura et al. for teaching a hermetically sealed housing (see FIG. 6 and col. 21, line 5).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Govan Date et al., Dormer and Auracher et al. as applied to claims 1-5, 8 and 11-14 above, and further in view of Huang (U.S. Patent 6,830,383 B2).

Govan Date et al., Dormer and Auracher et al. have been discussed above in regard to claims 1-5, 8 and 11-14. The difference between Govan Date et al., Dormer and Auracher et al. and the claimed invention is that Govan Date et al., Dormer and Auracher et al. do not teach the width of the housing. Huang teaches an optical transceiver in a small form factor (SFF) module.

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As admitted by instant specification in paragraph [33], a small form factor module implies that the housing must be 6.0 mm or less. One of ordinary skill in the art would have been motivated to combine the teaching of Huang with the modified transceiver sub-assembly of Govan Date et al., Dormer and Auracher et al. because SFF is common optical connector standard and is preferable for compatibility with other equipment. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to conform to the SFF standard, as taught by Huang, in the modified transceiver sub-assembly of Govan Date et al., Dormer and Auracher et al. because SFF is common optical connector standard and is preferable for compatibility with other equipment.

#### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (7:30 a.m. - 4:30 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl  
22 April 2007



**Shi K. Li**  
**Patent Examiner**